UNIVERSITI TEKNOLOGI MARA

ASSESSMENT OF SELECTED HEAVY METAL IN COCKLES (A. GRANOSA), RIVER WATER AND LEACHATE CHARACTERIZATION AND ITS POTENTIAL HEALTH RISK.

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Project submitted in fulfillment of the requirements for the degree of

Bachelor (Hons.) in Environmental Health and Safety
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Declaration by Student

Project entitled "*Assessment of selected heavy metal in cockles (A. granosa), river water and leachate characterization and its potential health risk*" is a presentation of my original work. Wherever contributions of others are involved, every effort is made to indicate this clearly, with due reference to the literature, and acknowledgement of collaborative project and discussions. This project was done under the guidance of Mr. Razi Ikhwan Bin Md Rashid as Project Supervisor. This project has been submitted to the Faculty of Health Sciences in partial fulfillment of the requirements for the awarding of Degree of Bachelor in Environmental Health and Safety (Hons).

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TABLE OF CONTENTS

Abstract

Assessment of selected heavy metal in cockles (*A. granosa),* river water and leachate characterization and its potential health risk.

Nurul Syazana Binti Shukri

Introduction: This study aims to determine the concentration of heavy metals in cockles (*A.granosa*) and river water during wet and dry seasons and its potential health risk. Besides, to characterize the physiochemical parameter in landfill leachate. Cockles are one of bioindicator of aquatic ecosystem due to its ability to accumulate metal. From the previous study, season of sampling is one of factor known to influence metal concentration and accumulation in this organism.

Methodology: The study was conducted at commercially cultured cockle bed, coastal area of Pantai Remis, Jeram which is located approximately 8km away from Jeram Sanitary Landfill and the nearest river at cockles' bed, namely Sembilang River. The study design used was cross sectional study. 18 samples of cockles, 12 samples of surface water and 3 samples of raw leachate were taken for analysis selected heavy metal using Inductively Coupled Plasma Mass Spectrometry (ICP-MS).

Results: The analysis shows there was a little variation in heavy metal concentration between location and season for surface water and cockles samples. For raw leachate samples, 8 parameters which are BOD, COD, Cr, Fe, Ni, Zn and As were over the standard limit allowed by the Environmental Quality (Control of Pollution from Solid Waste Transfer Station and Landfill) Regulations 2009. Target Hazard Quotient (THQ) value was found lower for all heavy metal and show no potential risk.

Conclusion: There is significant different of concentration of heavy metal in cockles between wet and dry season. However, it is not solely the seasonal variation as factor that influences the concentration of heavy metal. Consumption of the cockles in Jeram can be concluded as safe as the level of selected heavy metal is low enough and low THQ.

Keyword: Cockles, surface water, raw leachate, seasonal variation, heavy metal, health risk